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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/902,760	07/12/2001	Hirochika Matsuoka	35.C15565	9589

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EXAMINER

THOMPSON, JAMES A

ART UNIT	PAPER NUMBER
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2625

DATE MAILED: 09/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/902,760

Applicant(s)

MATSUOKA, HIROCHIKA

Examiner

James A. Thompson

Art Unit

2625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 03 July 2006 have been fully considered but they are not persuasive. Applicant's present amendments to the claims have been fully considered by Examiner. Both surface and internal gradation lines are mapped in Ng (US Patent 5,185,661), as set forth in the new grounds of rejection given below. Both the internal gradation lines and surface gradation lines indicate a locus of color change, particularly with respect to hue, as is also set forth in detail below. The new grounds of rejection below have been necessitated by the present amendments to the claims.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 12, 16 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Ng (US Patent 5,185,661).

Regarding claims 12, 16 and 17: Ng discloses an image processing apparatus comprising:

- a first sample point setting unit (figure 9A(18) and column 4, lines 37-42 of Ng) adapted to set first sample points on a surface ($P_i(L_i^*, a_i^*, b_i^*)$) of the first color gamut (figure 6; figure 8; and column 8 lines 4-24 of Ng) and second sample points ($P_i(L_i^*, a_i^*, b_i^*)$) in the first color gamut

Art Unit: 2625

(figure 6 and column 6, lines 9-13 of Ng). A first color gamut is defined and converted into a second color gamut based on both the internal points (figure 6 and column 6, lines 9-16 of Ng) and the boundary points (figure 8 and column 8, lines 4-24 of Ng). The first sample points are taken from the boundary of the first color gamut, and the second sample points are taken from the internal points.

- an obtaining unit (figure 9A(20) and column 4, lines 69 to column 5, line 3 of Ng) adapted to obtain third sample points ($P_o(L_i^*, a_i^*, b_i^*)$) corresponding to the first sample points (figure 8 and column 8, lines 4-24 of Ng), and fourth sample points ($P_o(L_i^*, a_i^*, b_i^*)$) corresponding to the second sample points (figure 6 of Ng), wherein the third sample points and the fourth sample points are in the second color gamut (column 6, lines 9-21 of Ng). The boundary points of the first color gamut (first sample points) are mapped to the boundary points of the second color gamut (third sample points) (figure 8 and column 8, lines 4-24 of Ng). The internal color points of the first color gamut (second sample points) are mapped to the internal color points of the second color gamut (fourth sample points) (figure 6 and column 6, 9-21 of Ng).
- a gradation line setting unit (figure 9A(22) and column 5, lines 19-24 of Ng) adapted to set surface gradation lines based on the first sample points (figure 8(21) and column 8, lines 17-37 of Ng) and internal gradation lines based on the second sample points (figure 7b(58); column 7, lines 25-30; and column 8, lines 37-40 of Ng).
- a gradation line mapping unit (figure 9B(32) and column 6, lines 42-48 of Ng) adapted to map the surface gradation

Art Unit: 2625

lines based on the third sample points (figure 8(21) and column 8, lines 17-37 of Ng), and mapping the internal gradation lines based on the fourth sample lines (figures 7b-7c; column 7, lines 25-43; and column 8, lines 37-42 of Ng).

- an input color mapping unit (figure 9B(34) and column 6, lines 64-68 of Ng) adapted to map an input color into the second color gamut by using the mapped surface gradation lines and the mapped internal gradation lines (column 6, lines 42-44 and lines 61-64 of Ng), wherein the surface gradation lines and the internal gradation lines each indicate a locus of color change (ΔH) in the first color gamut (column 8, lines 37-42 of Ng), and the mapped surface gradation lines and the mapped internal gradation lines each indicate a locus of color change (ΔH) in the second color gamut (column 8, lines 37-42 of Ng). Both the internal and boundary points are mapped with respect to a locus of color change (ΔH) and stored in a LUT (figure 6; figure 8; and column 8, lines 37-42 of Ng).

Further regarding claim 12: The apparatus of claim 16 performs the method of claim 12.

Further regarding claim 17: The apparatus of claim 16 performs the steps of the computer program of claim 17.

Art Unit: 2625

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ng (US Patent 5,185,661) in view of Tuijn (US Patent 6,058,207).

Regarding claim 13: Ng does not disclose expressly that the surface, internal, mapped surface, and mapped internal gradation lines are obtained by using at least one of a B-spline curve, a rational B-spline curve, a Bezier curve, and a one- or more-dimensional spline curve.

Tuijn discloses performing color modification in a color gamut (column 6, lines 58-67 of Tuijn) by obtaining a curve using at least one of a B-spline curve, a rational B-spline curve, a Bezier curve, and a one- or more-dimensional spline curve (column 12, lines 42-49 and column 13, lines 7-10 of Tuijn).

Ng and Tuijn are combinable because they are from the same field of endeavor, namely color gamut correction and modification for digital color processing systems. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use a spline function or a Bezier function, as taught by Tuijn, to obtain the surface, internal, mapped surface, and mapped internal gradation lines taught by Ng. The

Art Unit: 2625

motivation for doing so would have been that appropriate weight values are required to better transform color space values (column 5, lines 32-38 of Tuijn), such as in the case of the spline (column 12, line 47-52 of Tuijn) and Bezier curves (column 13, lines 7-10 of Tuijn). Therefore, it would have been obvious to combine Tuijn with Ng to obtain the invention as specified in claim 13.

6. Claims 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ng (US Patent 5,185,661) in view of Berns (*Principles of Color Technology*, by Roy S. Berns, third edition, pp. 20-23 and pp. 151-164).

Regarding claim 14: Ng discloses that the first sample points are located in $L^*a^*b^*$ space (figure 6 and column 4, lines 37-42 of Ng).

Ng does not disclose expressly that the first sample points are located on six faces of an R (red) face, a G (green) face, a B (blue) face, a C (cyan) face, a M (magenta) face, and a Y (yellow) face in the first color gamut.

Berns discloses sampling color points which are located on six faces of an R (red) face, a G (green) face, a B (blue) face, a C (cyan) face, a M (magenta) face, and a Y (yellow) face in a color gamut (page 153 figure; page 154 figure; and page 155, left column, last paragraph of Berns).

Ng and Berns are combinable because they are from the same field of endeavor, namely color image data processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the RGB additive - CMY subtractive color space taught by Berns instead of the $L^*a^*b^*$ color space taught by Ng. The motivation for doing so would have been

Art Unit: 2625

that RGB primary colors are the primary colors directly used for CRT displays, and CMY primary colors are the primary colors directly used for paints and printer inks (page 155, left column, last paragraph of Berns). Therefore, it would have been obvious to combine Berns with Ng to obtain the invention as specified in claim 14.

Regarding claim 15: Ng discloses that the mapping of the surface and internal gradation lines to the second color gamut includes mapping in an $L^*a^*b^*$ color space according to the first color gamut and the second color gamut (figure 6 and column 4, lines 37-42 of Ng).

Ng does not disclose expressly that said mapping of the surface and internal gradation lines to the second color gamut includes two-dimensional mapping on a lightness-chroma plane, and adjustment of the hue component.

Berns discloses mapping sample points to a second color gamut including two-dimensional mapping on a lightness-chroma plane (page 21, right column, last full paragraph and last two lines to page 22, left column, first two non-figure text lines; and page 21, right column, figure("Achromatic pebbles") and figure("Chromatic pebbles") of Berns), and adjustment of the hue component (page 22, left column, both figures; and page 22, right column, first paragraph under "Color Coordinates" heading).

Ng and Berns are combinable because they are from the same field of endeavor, namely color image data processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to map the surface and internal gradation lines taught by Ng onto a second color gamut, wherein said second color is a lightness-chroma-hue color gamut, and

Art Unit: 2625

adjusting the hue, as taught by Berns. The suggestion for doing so would have been that colors can be conveniently quantified according to their lightness, chroma and hue (page 22, "Hue", "Lightness" and "Chroma" bullet points of Berns). Therefore, it would have been obvious to combine Berns with Ng to obtain the invention as specified in claim 15.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

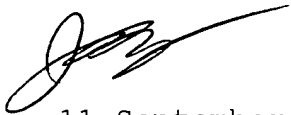
Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Thompson whose telephone number is 571-272-7441. The examiner can normally be reached on 8:30AM-5:00PM.

Application/Control Number: 09/902,760
Art Unit: 2625

Page 9

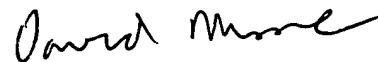
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K. Moore can be reached on 571-272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



11 September 2006

James A. Thompson
Examiner
Technology Division 2625



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